Inspiring Greatness

ISD

INDEPENDENCE SCHOOL DISTRICT

High School Science Virtual Learning

Biology

Graphing

April 16, 2020

High School Biology

Lesson: Graphs

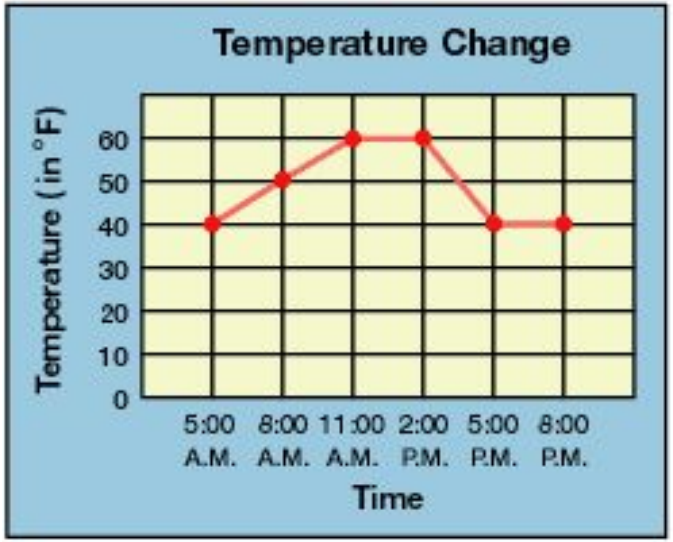
Objective/Learning Target:

The student will be able to interpret & create graphs.

Bell Ringer Activity

Draw a line to label each part of the graph.

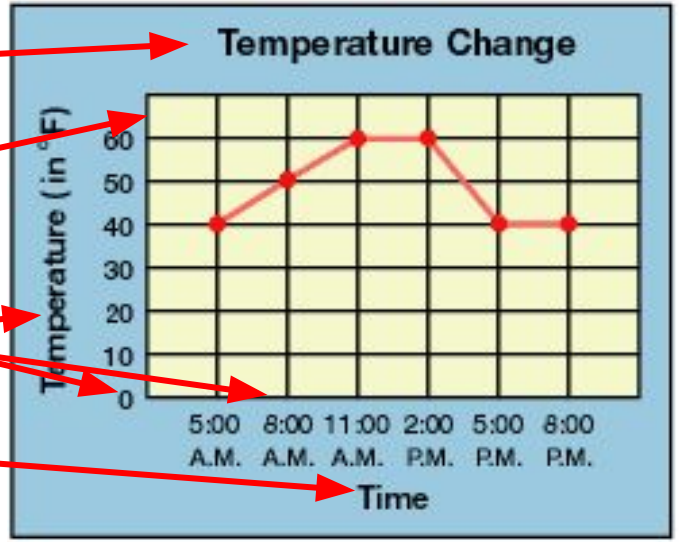
1. Title
2. Scale
3. X-axis
4. Y-axis
5. Labels



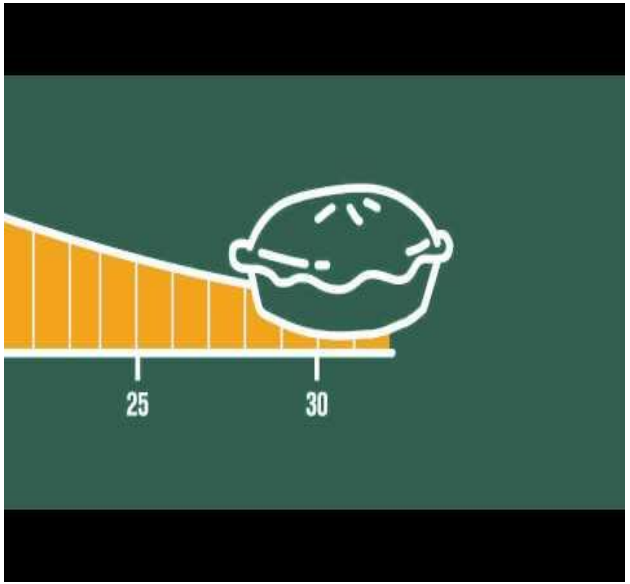
Bell Ringer Activity

Draw a line from the label to each part of the graph.

1. Title
2. Scale
3. X-axis
4. Y-axis
5. Labels



Let's Get Started!



Lesson Activity: How to Interpret Graphs

Watch this video and answer the questions below:

1. There are 3 steps to interpreting or understanding tables and graphs. What is step 1?
2. What is step 2?
3. What is step 3?
4. What is the main reason for using a graph or diagram?
5. If a line graph slopes down, what type of relationship is it representing?
6. In a line graph what type of relationship slopes up?

Lesson Activity Answers to: How to Interpret Graphs

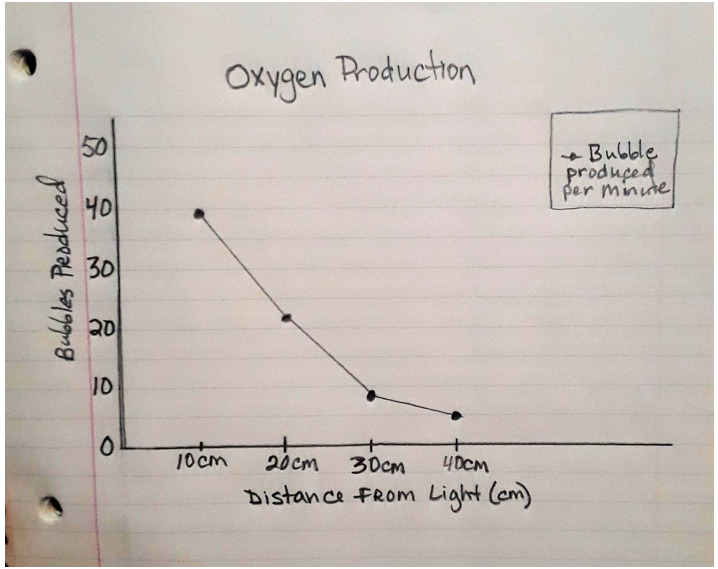
1. Step 1 is to determine what the table or graph represents.
2. Step 2 is to take note of the units of measurement.
3. Step 3 is to look for trends in the data.
4. The main reason for using a graph or diagram is to show how one characteristic of the data tends to influence one or more of the other characteristics.
5. If a line graph slopes down to the right, it is representing an inverse relationship (as X increases, Y decreases).
6. If a line graph slopes up, it is showing a direct relationship (as X increases, Y increases).

Lesson Activity:
How to Create Graphs

Read this article on how to create a Line Graph. Then, use the data in this chart to create a line graph using a pencil and a sheet of paper.

Oxygen Production	
Distance From Light (cm)	**Bubbles Produced per Minute**
10	39
20	22
30	8
40	5

Line graph using a pencil and a sheet of paper answer:

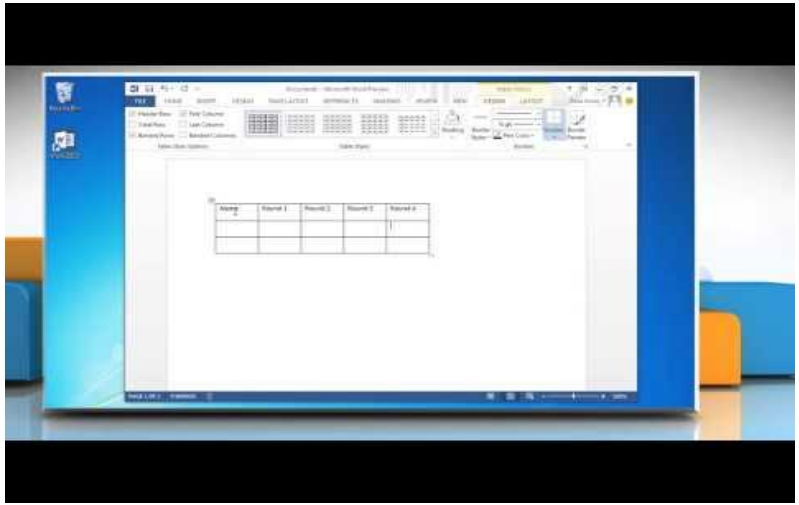


Self-Check

Did you remember to:

- Place a title on the top of the page.
- Draw & label the x- and y-axes.
- Add your data points and connect them with a line.
- Create a key to identify what the line represents.

Did you know you can make bar graphs and line graphs in Word? Watch this video to find out how.

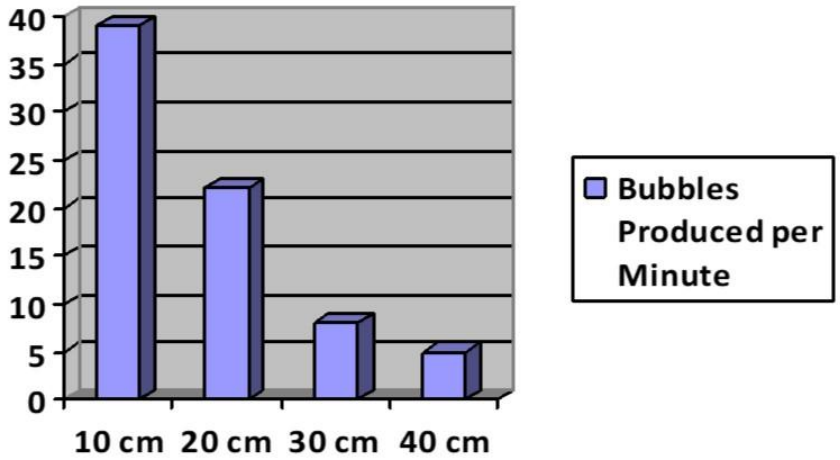


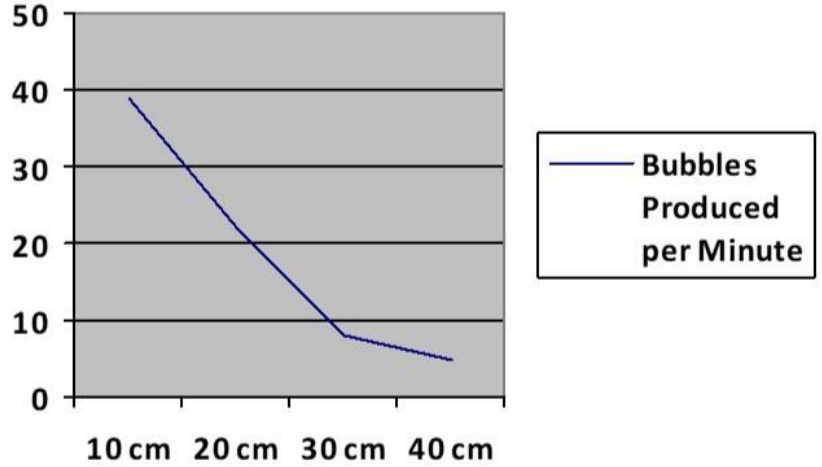
Create Graphs Using Word

Use this data table to create a bar graph and line graph in Word.

	10 cm	20 cm	30 cm	40 cm
Bubbles Produced per Minute	39	22	8	5

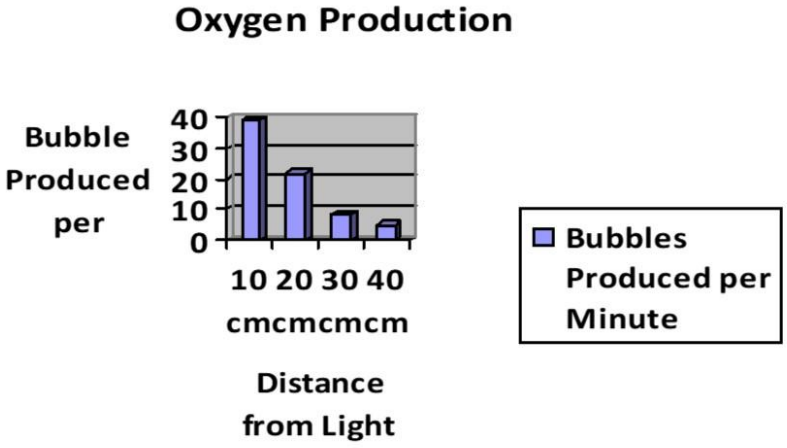
Bar graph and line graph in Word answers:

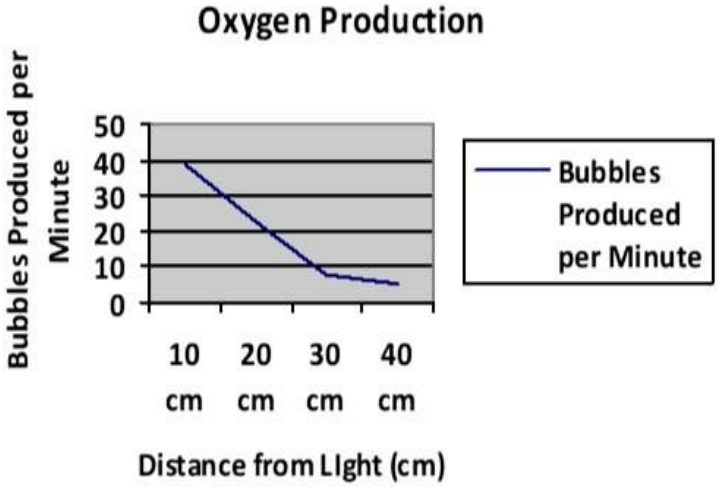


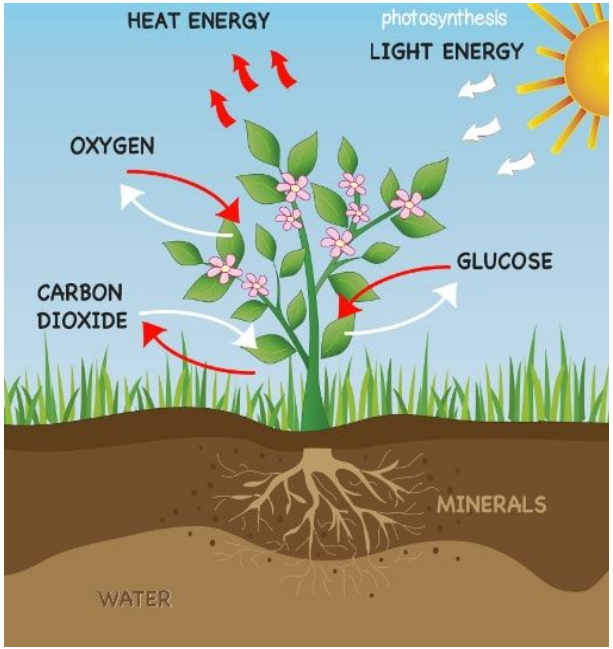


Here's how to add a title and label your axis:

(1) Double-click on your chart; (2) Click <chart>; (3) Click <chart options>; (4) Add your title and labels in the appropriate boxes; (5) Click <ok>

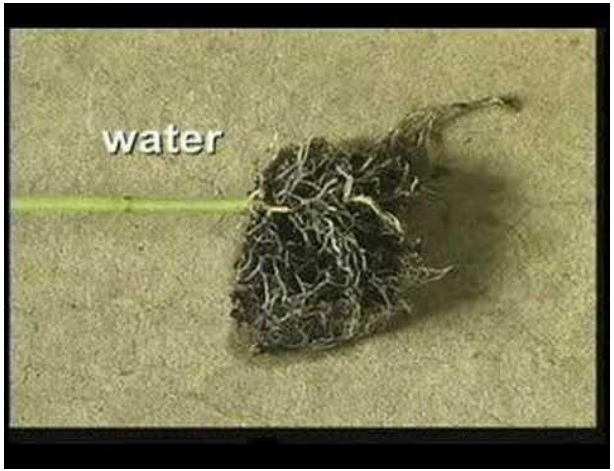






Rates of photosynthesis and cellular respiration are often recorded and displayed graphs.

Before moving on the practice questions watch this video to review what you know about photosynthesis and cellular respiration.



Practice

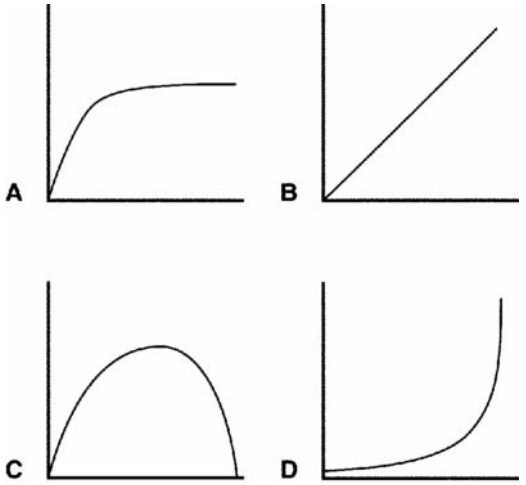
Complete the following questions using the information you learned during the lesson activity.

Practice Questions

1. Use the graph and table to answer the question. Imagine that y-axis of each graph describes the rate of photosynthesis. Which of the graphs bests represents the effect of light intensity on the rate of photosynthesis?

A
B
C
D

Light Intensity (Angstroms)	Rate of Photosynthesis (O2 ppt/min
0	0
500	58
1000	89
1500	99
2000	106



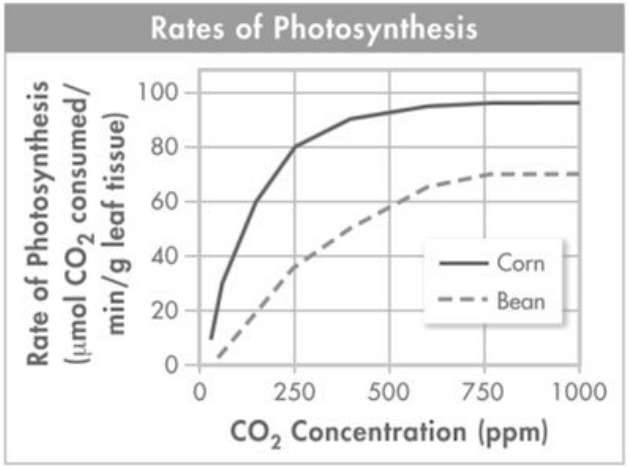
2. What inference is best supported by the data in the graph?

A. CO_2 concentration is closely related to light intensity.

B. Plants reach their maximum rate of photosynthesis at a CO_2 concentration of about 500 ppm.

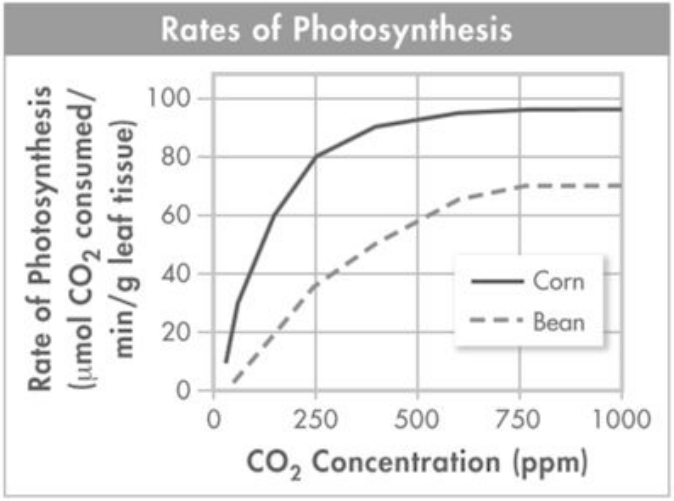
C. At a CO_2 concentration of 1250 ppm, corn and beans will have the same rate of photosynthesis.

D. For these plants, rates of photosynthesis at CO_2 concentrations of 1250 ppm and 750 ppm are very similar.



3.Which conclusion best matches the trends shown on the graph?

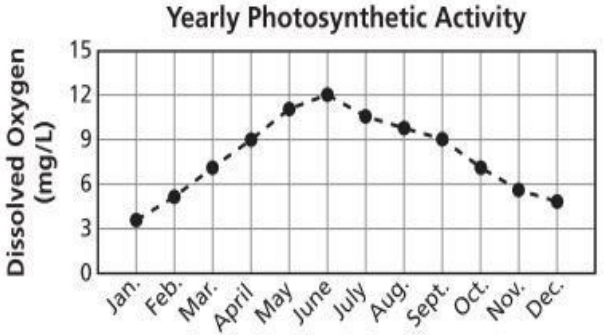
A. Bean plants produce more ATP than corn plants.
B. Corn plants require more oxygen than bean plants.
C. Corn plants release more carbon dioxide than bean plants.
D. Corn plants produce sugars at a faster rate than bean plants.



4. What conclusion is best supported seen by the evidence in the graph?

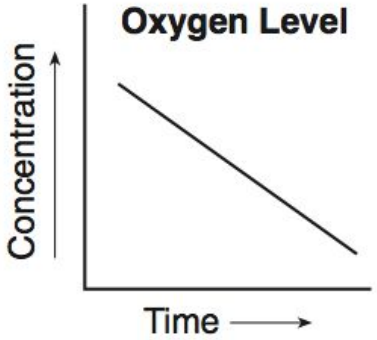
A. Photosynthesis organisms were dormant from April to June
B. The rate of photosynthesis increased from June-December.
C. The rate of photosynthesis was greatest during May-June
D. Photosynthetic organisms experience a die off Jan-June.

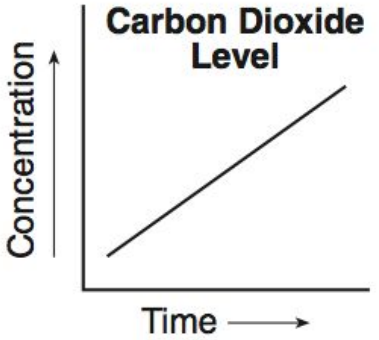
An ecologist performed a study to determine how the rate of photosynthetic activity in a lake changed from month to month. The results of the study are shown in the graph below.



5. The graphs below show the changes in the relative concentrations of two gases in the air surrounding a group of mice

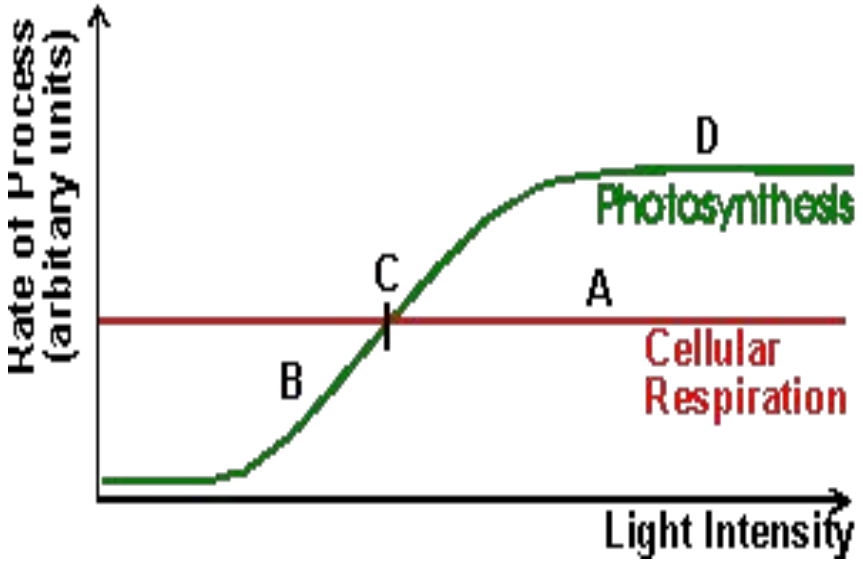
A. active transport
B. evaporation
C. respiration
D. photosynthesis





6. Where are the rate of cellular respiration and photosynthesis equal in the graph?

A. Point A
B. Point B
C. Point C
D. Point D



Practice Questions Answers

Once you have completed the practice questions check with the answer key.

1. Graph A
2. D-For these plants, rates of photosynthesis at CO_2 concentrations of 1250 ppm and 750 ppm are very similar.
3. D-Corn plants produce sugars at a faster rate than bean plants.
4. C- The rate of photosynthesis was greatest during May-June
5. C-Respiration
6. C-Point C

Additional Online Practice:

Click on the link below for additional practice.

Factors Affecting Photosynthesis Lab

Rate of Photosynthesis Graphs

Additional Resources

How to Create a Graph in Excel

If you love graphing in Excel and want a more detailed tutorial, check this video out.